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EXHIBIT A
DESCRIPTION OF AN INTERIM ELECTRONIC
RECONNAISSANCE SYSTEM TO BE KNOWN AS
SYSTEM 5

1-1 This proposal describes an interim system to provide an electronic reconnaissance capability in the frequency range from 60 Mc/s to 10,750 Mc/s. It is intended to meet the need for an operational system which provides an immediate though less than optimum performance capability.

1-2 The system described by this proposal is of the crystal-video type. It is for the most part made up of units which are component parts of other existing equipments or systems. The system consists of antenna equipment, receiving equipment, tape recording equipment, and power supply equipment. All the equipment is designed to mount on a frame which in turn is installed in the bay of the aircraft.

1-3 For purposes of description the system may be considered to be classified into channels which indicate the frequency range of operation. With each channel there are associated: the antenna or antennas, the r-f filters and detectors, video amplifiers, power supplies, and tape recorder.

1-4 Channels 1 and 2 of this system provide v.h.f. coverage. Each channel consists of two antennas, two receiving equipments, a System 1 airborne recorder, and vibrator power supplies. The antennas are of the "Club" type and are not to be furnished by the contractor. The v.h.f. amplifiers are special vacuum tube amplifiers which had been previously designed for other applications. They are of a band pass nature and cover the range of 60 to 80 Mc/s in Channel 1 and 75 to 95 Mc/s in Channel 2. Each such amplifier is designed to operate into a crystal detector. Each of the receiving equipments is followed by a video amplifier consisting of a transistorized video pre-amplifier developed for System 4 and a System 1 Information Amplifier. A System 1 vibrator power supply provides the operating power for the information amplifiers as well as a System 1 airborne recorder. Another System 1 vibrator supply is utilized in each receiving channel to supply operating power for the two v.h.f. amplifiers. Two antennas, receiving equipments, and video amplifiers are used in each of these channels to provide right-left coverage simultaneously.

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1-5 Channel 3 equipment provides coverage from 170 Mc/s to 280 Mc/s. It is a single receiving equipment channel. The antenna is a spiral identical to that for Band I coverage on System 4. It provides broad coverage looking straight down. The receiving equipment proper consists of an r-f filter, crystal detector, and video circuitry as described above. There is a System 1 airborne recorder associated with this channel as well as one vibrator supply to operate the information amplifier and the recorder.

1-6 The design of Channels 4, 5, and 6 is essentially the same as Channel 3 except that there are dual antennas, receiving equipments and video amplifiers to provide continuous right-left coverage. The frequency ranges covered are 300 to 570 Mc/s for Channel 4, 520 to 1100 Mc/s for Channel 5, and 1.0 to 2.6 KMc/s for Channel 6. The antennas used are those developed respectively for Bands II, III, and IV, of System 4.

1-7 Channels 7, 8, and 9, are identical, from a system standpoint, to Channels 4, 5, and 6 differing only in the types of antennas used. Each of the receiving equipments has a pair of horns to provide both a horizontal and vertical polarization capability. These antennas are respectively the same as for Bands V, VI, and VII in System 4. Channels 7, 8, and 9, cover the ranges of 2.3 to 4.45 KMc/s, 4.3 to 7.35 KMc/s, and 7.05 to 10.75 KMc/s, respectively.

1-8 As indicated above System 1 vibrator power supplies provide operating power for all Information Amplifiers, Recorder System 1 units, and in the case of Channels 1 and 2 the v.h.f. amplifiers. The transistorized video pre-amplifiers used throughout the system are operated from a common battery pack which provides the necessary operating potential of 28 volts. A common timing unit, producing ten second markers, is provided to supply common timing information to the recorder for each Channel.

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